Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-39 (canceled)

Claim 40 (new): A method of creating an encoded time domain audio signal comprising:

sampling an audio signal to generate a plurality of sub blocks of sampled audio, each of the sub blocks having a duration less than a minimum audibly perceivable signal delay;

combining the sub blocks into a plurality of windowed overlapping short blocks;

sequentially transforming each of the windowed overlapping short blocks into a frequency domain;

encoding each transformed short block in the frequency domain by:

selecting a code signal frequency to encode to the transformed short block based on data to be embedded;

determining a masking energy associated with the code signal frequency to be encoded in the transformed short block;

selecting an amplitude for the code signal frequency for the transformed short block based on the masking energy;

synthesizing a code signal;

adding the synthesized code signal to the transformed short block to form an encoded short block; and

transforming the encoded short block into a time domain to form an encoded time domain short block; and

constructing an encoded time domain signal from at least two sequential ones of the encoded time domain short blocks, wherein the encoded time domain signal is generated without buffering an entire long block of audio samples and without transforming the entire long block of audio samples into the frequency domain.

Claim 41 (new): An apparatus for creating an encoded time domain audio signal comprising:

a sampler configured to an audio signal to generate a plurality of sub blocks of sampled audio, each of the sub blocks having a duration less than a minimum audibly perceivable signal delay;

a combiner configured to the sub blocks into a plurality of windowed overlapping short blocks;

a transformer configured to sequentially transform each of the windowed overlapping short blocks into a frequency domain;

an encoder configured to encode each transformed short block in the frequency domain by:

selecting a code signal frequency to encode to the transformed short block based on data to be embedded;

determining a masking energy associated with the code signal frequency to be encoded in the transformed short block;

selecting an amplitude for the code signal frequency for the transformed short block based on the masking energy;

synthesizing a code signal;

adding the synthesized code signal to the transformed short block to form an encoded short block; and

transforming the encoded short block into a time domain to form an encoded time domain short block,

wherein the encoder is configured to construct an encoded time domain signal from at least two sequential ones of the encoded time domain short blocks, wherein the encoded time domain signal is generated without buffering an entire long block of audio samples and without transforming the entire long block of audio samples into the frequency domain.

Claim 42 (new): A method of inserting an inaudible code into an audio signal comprising:

sampling the audio signal to generate a plurality of sub blocks of sampled audio, each of the sub blocks having a duration less than a minimum audibly perceivable signal delay;

combining the sub blocks into a plurality of partially overlapping short blocks which together comprise a long block;

individually transforming each of the short blocks into a frequency domain;

encoding each transformed short block in the frequency domain with a desired code by:

selecting at least one frequency to encode based on the desired code to insert and a predetermined coding rule;

setting an amplitude of the at least one frequency based on a masking energy associated with the at least one frequency;

setting a phase angle of the at least one frequency; and

transforming the encoded short block into the time domain; and

constructing an encoded time domain signal from at least two sequential ones of the encoded time domain short blocks, the phase angles of the encoded short blocks are set by setting the phase angle of the at least one frequency of a first short block to a first

predetermined value, and incrementing the phase angle of each subsequent short block by a predetermined amount.

Claim 43 (new): A method as defined in claim 42, wherein selecting at least one frequency to encode comprises selecting at least one frequency to encode in each of a plurality of frequency bands, wherein setting the amplitude of the at least one frequency comprises setting the amplitude of the at least one frequency in each of the plurality of frequency bands, and wherein setting the phase angle of the at least one frequency comprises setting the phase angle of the at least one frequency in each of the plurality of frequency bands.

Claim 44 (new): A method as defined in claim 43, wherein the plurality of frequency bands comprises at least five frequency bands.

Claim 45 (new): A method as defined in claim 42 further comprising decoding the long block.

Claim 46 (new): A method as defined in claim 45, wherein decoding the long block comprises:

transforming the long block as a whole into the frequency domain; and

identifying a code in the long block as the desired code if the code is carried by a majority of the frequency bands.

Claim 47 (new): A method as defined in claim 46, wherein the code is carried by a majority of the frequency bands if a frequency identified in the predetermined coding rule is a relative maximum in a majority of the frequency bands.

Claim 48 (new): A method as defined in claim 42, wherein the first predetermined value comprises zero degrees.

Claim 49 (new): An apparatus for inserting an inaudible code into an audio signal comprising:

a sampler configured to the audio signal to generate a plurality of sub blocks of sampled audio, each of the sub blocks having a duration less than a minimum audibly perceivable signal delay;

a combiner configured to combine the sub blocks into a plurality of partially overlapping short blocks which together comprise a long block;

a transformer configured to individually transform each of the short blocks into a frequency domain;

an encoder configured to encode each transformed short block in the frequency domain with a desired code by:

selecting at least one frequency to encode based on the desired code to insert and a predetermined coding rule;

setting an amplitude of the at least one frequency based on a masking energy associated with the at least one frequency;

setting a phase angle of the at least one frequency; and

transforming the encoded short block into the time domain,

wherein the encoder is configured to construct an encoded time domain signal from at least two sequential ones of the encoded time domain short blocks, the phase angles of the encoded short blocks are set by setting the phase angle of the at least one frequency of a first short block to a first predetermined value, and incrementing the phase angle of each subsequent short block by a predetermined amount.

Claim 50 (new): An apparatus as defined in claim 49, wherein the encoder is configured to select at least one frequency to encode in each of a plurality of frequency bands, to set the amplitude of the at least one frequency in each of the plurality of frequency bands, and to set the phase angle of the at least one frequency in each of the plurality of frequency bands.

Claim 51 (new): An apparatus as defined in claim 50, wherein the plurality of frequency bands comprises at least five frequency bands.

Claim 52 (new): An apparatus as defined in claim 49 further comprising a decoder configured to decode the long block.

Claim 53 (new): An apparatus as defined in claim 52, wherein the decoder comprises:

a transformer configured to transform the long block as a whole into the frequency domain; and

an identifier configured to identify a code in the long block as the desired code if the code is carried by a majority of the frequency bands.

Claim 54 (new): An apparatus as defined in claim 53, wherein the code is carried by a majority of the frequency bands if a frequency identified in the predetermined coding rule is a relative maximum in a majority of the frequency bands.

Claim 55 (new): An apparatus as defined in claim 49, wherein the first predetermined value comprises zero degrees.

Claim 56 (new): A method of inserting an inaudible code into an audio signal comprising:

sampling the audio signal to generate a plurality of partially overlapping short blocks which together comprise a long block;

generating an encoded long block by individually encoding each of the short blocks at a plurality of frequency bands by sequentially transforming each of the short blocks into a frequency domain and adjusting an amplitude and a phase angle of a frequency in each of the plurality of frequency bands in each of the short blocks;

transforming the encoded short blocks into the time domain to form an encoded time domain signal;

transmitting the encoded time domain signal;

receiving the encoded time domain signal;

identifying an encoded long block in the received time domain signal; and

decoding the encoded long block by transforming the entire encoded long block into the frequency domain and determining if a same code is identified by a majority of the plurality of frequency bands.

Claim 57 (new): An apparatus for inserting an inaudible code into an audio signal comprising:

a sampler configured to sample the audio signal to generate a plurality of partially overlapping short blocks which together comprise a long block;

a generator configured to generate an encoded long block by individually encoding each of the short blocks at a plurality of frequency bands by sequentially transforming each of the short blocks into a frequency domain and adjusting an amplitude and a phase angle of a frequency in each of the plurality of frequency bands in each of the short blocks;

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a transformer configured to transform the encoded short blocks into the time domain to form an encoded time domain signal;

a transmitter configured to transmit the encoded time domain signal;

a receiver configured to receive the encoded time domain signal;

an identifier configured to identify an encoded long block in the received time domain signal; and

a decoder configured to decode the encoded long block by transforming the entire encoded long block into the frequency domain and determining if a same code is identified by a majority of the plurality of frequency bands.

Claim 58 (new): A method of communicating an audio signal comprising:

encoding the audio signal by sequentially performing a low resolution frequency transformation on a sequence of overlapping short blocks to estimate a masking energy at a frequency to be encoded, the low resolution frequency transformation being the only transformation from a time domain to a frequency domain used to encode the audio signal to form an encoded audio signal; and

extracting a code from the encoded audio signal by performing a high resolution frequency transformation.

Claim 59 (new): A method as defined in claim 58, wherein extracting the code from the encoded audio signal comprises extracting the code from the encoded audio signal without employing a result of a low resolution frequency transformation.

Claim 60 (new): A method as defined in claim 58, wherein at least one of the low resolution frequency transformation and the high resolution frequency transformation comprises a Fourier frequency transformation.

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Claim 61 (new): A method of communicating an audio signal comprising:

encoding the audio signal by sequentially performing a low resolution frequency transformation on a sequence of overlapping short blocks to estimate a masking energy at a frequency to be encoded, wherein the audio signal is encoded without employing a result of a high resolution frequency transformation; and

extracting a code from the audio signal by performing a high resolution frequency transformation.

Claim 62 (new): A method as defined in claim 61, wherein extracting the code from the encoded audio signal comprises extracting the code from the encoded audio signal without employing a result of a low resolution frequency transformation.

Claim 63 (new): A method as defined in claim 61, wherein at least one of the low resolution frequency transformation and the high resolution frequency transformation comprises a Fourier frequency transformation.

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